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09/744,614	01/26/2001	John G. Carman	T9212.PCT.US	1620
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ALAN J. HOWARTH P.O. BOX 1909 SANDY, UT 84091-1909			KUBELIK, ANNE R	
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			1638	

DATE MAILED: 10/21/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/744,614	Applicant(s) CARMAN, JOHN G.	
	Examiner Anne R. Kubelik	Art Unit 1638	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on 04 August 2003.

2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) 1,2,8,9,15-17 and 19-24 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) 1,2,8,9,15-17 and 19-24 is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☒ The drawing(s) filed on 21 November 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) ☐ All b) ☐ Some * c) ☐ None of:

1. ☐ Certified copies of the priority documents have been received.

2. ☐ Certified copies of the priority documents have been received in Application No. _____.

3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.

4) ☐ Interview Summary (PTO-413) Paper No(s). _____.

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other:

DETAILED ACTION

1. The amendments filed 4 August 2003 have been entered. Claims 1-2, 8-9, 15-17 and 19-24 are pending.
2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim Objections

3. Claims 19-24 are objected to because of the following informalities:

In claims 19 and 21-22, there should a comma after "1".

In claim 20, there should a comma after "19".

In claims 23-24, there should a comma after "22".

Claim Rejections - 35 USC § 112

4. Claims 1-2, 8-9, 15-17 and 19-24 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter that was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The rejection is repeated for the reasons of record as set forth in the Office action mailed 29 January 2003, as applied to claims 1-2, 5, 8-9, 12 and 15-18. Applicant's arguments filed 4 August 2003 have been fully considered but they are not persuasive.

Applicant urges that the invention relates to methods for stabilizing and controlling apomixis and that just because the methods are broadly claimed does not mean they are not

enabled. Applicant urges that claims of broad, narrow and intermediate scope are present (response pg 18-20).

This is not found persuasive because claims of all scope must be enabled. A broadly claimed invention requires it be broadly enabled.

Applicant urges that the specification, on pg 12, lines 10-13, pg 1, lines 5-11 and pg 8, lines 3-7 teach that stabilizing apomixis means assuring that the average frequency of sexual seed formation among sexually derived progeny of an apomictic mother plant does not exceed that of such apomictic mother plant. Applicant urges that plant breeding is a well-known technology. Applicant urges that copending application 09/576,623 and the instant application teach how to select sexual parent plants and hybridize them to produce apomictic progeny. Applicant thus urges that the nature of the invention makes the specification enabling (response pg 20-22).

This is not found persuasive. The rejection was not made because plant breeding is not a well-known technology, but because the specification does not teach a method of increasing stability of apomixis to the full breadth of the claims. The claims are not limited to increasing stability of apomixis in apomictic plants produced by the method of copending application 09/576,623, but encompass apomictic plants produced by any method.

Applicant urges that convention wisdom has held that apomixis is controlled by a single gene, and that copending application 09/576,623 and the instant application challenge that wisdom. Applicant urges that the present invention is based on the asynchronous expression of many duplicate genes required for female or seed development, and that plant breeding is known

In the art. Applicant thus urges that the state of the prior art weighs in favor of the present application containing an enabling disclosure (response pg 22).

This is not found persuasive because the claims are not drawn to asynchronous expression of many duplicate genes required for female or seed development.

Applicant urges that the level of skill of one in the art is high, and one of skill in the art would know how to select plants for plant breeding, how to hybridize and grow plants, how to recognize apomixis, how to determine if apomixis is unstable, and how to make polyploid derivative lines (response pg 23).

This is not found persuasive. This is agreed in general, but the prior art does not teach how to determine if a plant is generically divergent enough to genetically enhance an apomictic plant, nor does it teach how to bred an apomictic plant to include genetic material that results in female meiosis abortion or facultative apomixis because those genes are not taught in the art, nor are they taught in the instant specification.

Applicant urges that the method has been taught for a dicot and two monocots, and is thus taught for a broad range of angiosperms. Applicant also urges that plant breeding is well-known for both monocots and dicots and one of skill in the art could determine if apomixis is unstable, and do chromosome doubling. Applicant urges that the result of amphiploidization is suppression of segregation of the gene responsible for apomixis and presents a model for how doubling works to stabilize apomixis. Applicant thus urges that the method is predictable (response pg 23-27).

This is not found persuasive because the specification does not teach how to increase the stability of apomixis in apomictic plants produced by any method.

Applicant urges that the specification provides a through explanation of how to make apomictic plants using duplicate gene asynchrony, and that any experimentation required would be routine (response pg 27-29). This is not found persuasive. Applicant's arguments are assertions only, and are not convincing for the reasons above.

5. Claims 8-9 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter that was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The rejection is repeated for the reasons of record as set forth in the Office action mailed 29 January 2003, as applied to claims 1-2, 5, 8-9, 12 and 15-18. Applicant's arguments filed 4 August 2003 have been fully considered but they are not persuasive.

Applicant urges that the disclosure makes clear the chromosome numbers of unstable apomicts are doubled and how sexual sterility can be obtained (response pg 29-30).

This is not found persuasive because all the phenotypic and genotypic characteristics of the claimed plants are not described.

6. Claims 2, 15-17, 22 and 22-24 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter that Applicant regards as the invention. Dependent claims are included in all rejections. The rejection is modified from the rejection set forth in the Office action mailed 29 January 2003, as

applied to claims 1-2, 5, 8-9, 12 and 15-18, due to amendment. Applicant's arguments filed 4 August 2003 have been fully considered but they are not persuasive.

Claims 15-16 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential steps, such omission amounting to a gap between the steps. See MPEP § 2172.01. The omitted steps are those involved in producing a segmental allopolyploid derivative line such that duplicate genes responsible for apomixis are isolated from recombination by segmental allopolyploidy. What does one have to do to produce such plants?

Applicant urges that the steps for making polyploids are well-known in the art and that allopolyploids are formed by making interspecific crosses while autopolyploids are formed by intraspecies crosses (response pg 14-15).

This is not found persuasive because a method claim must recite the positive active steps of the method. The crossing steps should be recited.

Claim 17, part (a) is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential steps, such omission amounting to a gap between the steps. See MPEP § 2172.01. The omitted steps are those involved in producing a derivative line such that female meiosis usually aborts. What does one have to do to produce such plants?

Applicant did not address this rejection.

In claim 22, line 20, the phrased "having an even ploidy level therefrom" is confusing. If the "therefrom" relates to "selecting", it should be moved after that word. Otherwise it is unclear what the phrase means.

Claim Rejections - 35 USC § 102

7. Claims 1-2, 8-9, 15-16 and 22-24 are rejected under 35 U.S.C. 102(e) as being anticipated by Hanna (US Patent 5,811,636). The rejection is repeated for the reasons of record as set forth in the Office action mailed 29 January 2003, as applied to claims 1-2, 5, 8-9, 12 and 15-18. Applicant's arguments filed 4 August 2003 have been fully considered but they are not persuasive.

Applicant urges that Hanna fails to disclose doubling the chromosome number of apomictic plants that are genetically unstable for apomixis and fails to disclose that the apomictic plants are genetically unstable. Applicant urges that Hanna discloses increasing the male fertility of hybrids but fails to disclose anything about the average frequency of apomixis from generation to generation (response pg 31-33).

This is not found persuasive because Hanna teaches chromosome doubling by production of a tetraploid from a cross between *P. glaucum* and *P. squamulatum*, wherein chromosome numbers were determined to ensure all the chromosomes from both parents were present (column 9, line 40, to column 10, line 31). This doubling the chromosome number would inherently increase the genetic stability for apomixis because all the method steps are identical to the claimed method steps. Hanna et al also teach crossing these plants to a hexaploid to produce apomictic progeny with higher seed set (column 13, line 32, to column 16, line 2). Hanna et al also teach selection for increased levels of apomixis in the form of obligate apomixis (column 17, line 19, to column 19, line 27).

8. Claims 15-16 are rejected under 35 U.S.C. 102(b) as being anticipated by Ellerstrom (1977, *Hereditas* 87:107-180). The rejection is repeated for the reasons of record as set forth in the Office action mailed 29 January 2003, as applied to claims 1-2, 8-9 and 15-16. Applicant's arguments filed 4 August 2003 have been fully considered but they are not persuasive.

Applicant urges that Ellerstrom failed to disclose doubling the chromosome number of genetically unstable apomicts or anything about the average frequency of apomixis from generation to generation or whether the apomicts were unstable (response pg 33-34).

This is not found persuasive. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., doubling the chromosome number of genetically unstable apomicts) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

9. Claims 15-16 are rejected under 35 U.S.C. 102(b) as being anticipated by Saran et al (1976, *J. Cytol. Genet.* 11:22-28). The rejection is repeated for the reasons of record as set forth in the Office action mailed 29 January 2003, as applied to claims 1, 8 and 15-16. Applicant's arguments filed 4 August 2003 have been fully considered but they are not persuasive.

Applicant urges that Saran describes apomictic hybrids produced from apomictic parents and did not hybridize two sexual genotypes. Applicant cites Mogie, 1992, but did not send it. Applicant urges that Saran is silent as to whether the plant is stable or unstable for apomixis and fails to teach doubling of the chromosome number (response pg 34-36).

This is not found persuasive because the claims do not recite hybridize sexual genotypes. Mogie, 1992 could not be considered because it was not sent.

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., doubling the chromosome number of genetically unstable apomicts) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Claim Rejections - 35 USC § 102 - 35 USC § 103

10. Claims 8-9 remain rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Kindiger (US Patent 5,710,367). The rejection is repeated for the reasons of record as set forth in the Office action mailed 29 January 2003. Applicant's arguments filed 4 August 2003 have been fully considered but they are not persuasive.

Applicant urges that Kindiger fails to disclose instability of apomixis as the terms stability and instability are used in the instant application and fails to disclose any method for stabilizing of apomixis. Applicant also urges that Kindiger does not disclose doubling the number of chromosomes (response pg 36-37 and 39-40).

This is not found persuasive because a prior art plant having the same characteristics as the claimed plant would anticipate the claimed plant even if made by a different method (i.e.,

using a different parent plant). The plants produced by Kindiger et al have double the number of chromosomes as diploid plants.

Additionally, a rejection under 35 U.S.C. 102 or 103 does not require the same analysis as a rejection under only 35 U.S.C. 102 or 35 U.S.C. 103. The rejection is made because the Examiner cannot determine whether the prior art possesses the unrecited characteristics. The Examiner does not have sufficient facts to determine whether claimed apomictic plants are inherently the same. In addition, the Examiner cannot conclude that the claimed subject matter would have been obvious since it cannot be determined whether the apomictic plants differ. Where the prior art product seems to be identical, except that the prior art is silent to a characteristic or property claimed, then the burden shifts to Applicant to provide evidence that the prior art would neither anticipate nor render obvious the claimed invention. See *In re Best* 195 USPQ 430, 433 (CCPA 1977).

Claim Rejections - 35 USC § 103

11. Claims 1-2, 5, 8-9, 12 and 15-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ellerstrom (1977, Hereditas 87:107-180) in view of Ellerstrom (1983, Hereditas 99:315). The rejection is repeated for the reasons of record as set forth in the Office action mailed 29 January 2003, as applied to claims XXXXXXXXXX. Applicant's arguments filed 4 August 2003 have been fully considered but they are not persuasive.

Applicant urges that Ellerstrom (1977) and Ellerstrom (1983) were discussed previously and that neither reference alone or in combination discloses or suggests a method of stabilizing genetic instability of apomixis (response pg 40-41).

This is not found persuasive. No arguments with respect to Ellerstrom (1983) were presented in the prior art portion of the response. Applicant has presented no arguments as to why the combination of references does not anticipate the claims.

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

12. Claims 1-2, 8-9 and 15-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Saran (1976, J. Cytol. Genet. 11:22-28) in view of Bashaw et al (1987, Principles of Cult. Devel., Vol 2, pg 40-82). The rejection is repeated for the reasons of record as set forth in the Office action mailed 29 January 2003, as applied to claims 1-2, 5, 8-9, 12 and 15-18. Applicant's arguments filed 4 August 2003 have been fully considered but they are not persuasive.

Applicant urges that Saran fails to disclose or suggest genetic instability of the apomixis trait from generation to generation. Applicant urges that Bashaw teaches that apomixis is produced by a single gene and fails to disclose or suggest genetic instability of the apomixis trait from generation to generation. Applicant urges that the references fail to disclose or suggest doubling the chromosome number (response pg 41-42).

This is not found persuasive because Saran et al teach crossing of two biotypes of the facultatively apomictic species *D. internedum* to produce a tetraploid plant, X570 (pg 22, line 24, to pg 23, line 26), and that this plant had genetically stabilized apomixis because apomixis was increased (Table 1, Figure 1, pg 23-27). Bashaw et al teach the need for additional breeding steps (pg 49).

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

13. Claims 19-22 are free of the prior art, given the failure of the prior art to teach or suggest a method of increasing genetic stability for apomixis by doubling the chromosome number by treatment with a spindle inhibitor.

Conclusion

14. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anne R. Kubelik, whose telephone number is (703) 308-5059. The examiner can normally be reached Monday through Friday, 8:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amy Nelson, can be reached at (703) 306-3218. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306 for regular communications and (703) 872-9307 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to Customer Service at (703) 308-0198.

Anne R. Kubelik, Ph.D.
October 14, 2003



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